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10/676,519	09/30/2003	Yu-Fei Ma	MS1-1640US	8301

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EXAMINER	
MOTSINGER, SEAN T	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Interview Summary	Application No.	Applicant(s)	
	10/676,519	MA ET AL.	
	Examiner	Art Unit	
	Sean Motsinger	2624	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Sean Motsinger*. (3) *John Fain*.

(2) *Jingge Wu*. (4)_____.

Date of Interview: *1/23/2007*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☐ No.
If Yes, brief description: _____.

Claim(s) discussed: *Proposed claim amendments were Discussed (see attached)*.

Identification of prior art discussed: *N/A*.

Agreement with respect to the claims f)☐ was reached. g)☒ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *It was agreed that the proposed amendments overcome the current 112 second paragraph rejections. Allowability of claims was not agreed upon because the examiner has determined that some of the proposed claims would require further search* .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Sean Motsinger
Examiner's signature, if required

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE (USPTO)

Serial Number	10/676,519
Confirmation Number	8301
Filing Date	Sep 30, 2003
Title of Application	A Contrast-Based Image Attention Analysis Framework
First Named Inventor	Yu-Fei Ma
Assignee	Microsoft Corporation
Group Art Unit	2624
Examiner	Sean Motsinger
Attorney Docket Number	MS1-1640US
Nature of this Document	Informal Communication in Preparation for Scheduling an Examiner Interview

To: Examiner Motsinger
Fax: (571) 270-2237

From: E. John Fain
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Dear Examiner Motsinger:

[0001] This communication provides an agenda for a phone interview of this matter. My assistant will be contacting you to schedule an interview. If you would prefer to schedule the interview, then please contact my assistant or me directly. Our contact info is on the signature page of this document. Thank you in advance for talking with me about this matter.

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Interview Agenda:

- Discussion of current §112 rejections; and
- Discussion of proposed amendments

Section 112

[0002] I would like to discuss whether or not proposed amendments to claim14 would overcome the current §112 rejections regarding the use of the term "fuzzy growing". Claim 14 is dependent of independent claim 8 which has been amended to incorporate the allowable subject matter of claim 15 that describes "fuzzy growing".

Proposed Amendments

[0003] Please see the attached Appendix of Proposed Claim Amendments. I would like to discuss your opinion regarding the proposed amendments in light of the currently cited references. Please notice that all independent claims have been amended to incorporate the allowed subject matter of claim 15.

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[0004] Thank you in advance for scheduling time for this interview. I look forward to talking to you.

Respectfully Submitted,

Dated: January 16, 2008

By:_____

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Appendix of Claims with Proposed Amendments

1. (Currently Amended) A method for modeling image attention, the method comprising:

preprocessing an image to generate a quantized set of image blocks; and

generating a contrast-based saliency map for modeling one-to-three levels of image attention from the quantized image blocks; and

performing a fuzzy growing operation to extract attended areas from the contrast-based saliency map, the fuzzy growing operation comprising:

partitioning the contrast-based saliency map into two mutually exclusive areas as a function of classes of pixels comprising attended and unattended pixel areas;

selecting seeds for the fuzzy growing operation according to a set of criteria such that a seed has a local maximum contrast with respect to other regional perception units and the seed belongs to an attended area;

grouping pixels in the contrast-based saliency map with gray levels that satisfy criteria that indicate attended as compared to unattended areas; and

iteratively growing the attended area by using grouped pixel as seeds in subsequent fuzzy growth operations until no candidates of the perception units can be grouped.

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2. (Previously Presented) The method of claim 1, wherein preprocessing further comprises:

resizing the image such that an aspect ratio of the image is maintained;

transforming the image from a first color space to a second color space that is consistent with human perception; and

making color in texture areas of the image coarser.

3. (Previously Presented) The method of claim 1, wherein generating the contrast-based saliency map further comprises:

dividing the image subsequent to quantization into multiple perception units; and

calculating a respective contrast of color components for each perception unit; and

normalizing calculated contrasts to smooth the contrasts.

4. (Previously Presented) The method of claim 1, further comprising extracting attended points from the contrast-based saliency map.

5. (Previously Presented) The method of claim 1, further comprising extracting an attended area from the contrast-based saliency map.

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6. (Previously Presented) The method of claim 1, further comprising extracting an attended view from the contrast-based saliency map.

7. (Currently Amended) A computer-readable medium storing computer-program instructions executable by a processor for modeling image attention, the computer-program instructions when executed by the processor performing operations comprising:

preprocessing an image to generate a quantized set of image blocks; and

generating a contrast-based saliency map for three-level contrast-based image attention analysis from the quantized image blocks; and

performing a fuzzy growing operation to extract attended areas from the contrast-based saliency map, the fuzzy growing operation comprising:

partitioning the contrast-based saliency map into two mutually exclusive areas as a function of classes of pixels comprising attended and unattended pixel areas;

selecting seeds for the fuzzy growing operation according to a set of criteria such that a seed has a local maximum contrast with respect to other regional perception units and the seed belongs to an attended area;

grouping pixels in the contrast-based saliency map with gray levels that satisfy criteria that indicate attended as compared to unattended areas; and

iteratively growing the attended area by using grouped pixel as seeds in subsequent fuzzy growth operations until no candidates of the perception units can be grouped.

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8. (Currently Amended) A computer-readable medium storing computer-program instructions executable by a processor, the computer-program instructions when executed by the processor for modeling image attention by operations comprising:

generating a preprocessed image by:

resizing the image such that an aspect ratio of the image is maintained; and

if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception;

quantizing the preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image; ~~and~~

generating a contrast-based saliency map from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components for each perception unit; and

performing a fuzzy growing operation to extract attended areas from the contrast-based saliency map, the fuzzy growing operation comprising:

partitioning the contrast-based saliency map into two mutually exclusive areas as a function of classes of pixels comprising attended and unattended pixel areas;

selecting seeds for the fuzzy growing operation according to a set of criteria such that a seed has a local maximum contrast with respect to other regional perception units and the seed belongs to an attended area;

grouping pixels in the contrast-based saliency map with gray levels that satisfy criteria that indicate attended as compared to unattended areas; and

iteratively growing the attended area by using grouped pixel as seeds in subsequent fuzzy growth operations until no candidates of the perception units can be grouped.

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9. (Previously Presented) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map.

10. (Previously Presented) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map.

11. (Previously Presented) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map, the attended view being a rectangle $V(C, W, H)$, where C denotes an attention center, and W and H are the width and height of rectangle respectively, the attention center being a centroid of the contrast-based saliency map.

12. (Previously Presented) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for determining a size of an attended view in the contrast-based saliency map, the size being related to a 1st order central moment of the contrast-based saliency map.

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13. (Previously Presented) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for extracting an attended area from the contrast-based saliency map.

14. (Currently Amended) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for extracting attended areas from the contrast-based saliency map by performing [[a]] the fuzzy growing operation on the contrast-based saliency map as a function of two classes of pixels to partition the contrast-based saliency map into two mutually exclusive areas, the two classes of pixels comprising attended and unattended pixel areas.

15. (Canceled) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for:

performing a fuzzy growing operation to extract attended areas from the contrast-based saliency map, the fuzzy growing operation comprising:

partitioning the contrast-based saliency map into two mutually exclusive areas as a function of classes of pixels comprising attended and unattended pixel areas;

selecting seeds to for the fuzzy growing operation according to a set of criteria such that a seed has a local maximum contrast with respect to other regional perception units and the seed belongs to an attended area;

grouping pixels in the contrast-based saliency map with gray levels that satisfy criteria that indicate attended as compared to unattended areas; and

iteratively growing the attended area by using grouped pixel as seeds in subsequent fuzzy growth operations until no candidates of the perception units can be grouped.

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16. (Previously Presented) The computer-readable medium of claim 8, wherein the computer-program instructions further comprise instructions for representing the contrast-based saliency map as a fuzzy event in probability space to extract attended areas.

17. (Previously Presented) The computer-readable medium of claim 16, wherein the contrast-based saliency map 216 has L gray levels from g_0 to g_{L-1} and the histogram of saliency map is h_k, k=0, ..., L-1, and wherein the computer-program instructions further for representing the contrast-based saliency map as a fuzzy event in probability space further comprise instructions for:

modeling the contrast-based saliency map by a triplet ($\mathbf{\Omega}$, k, $\mathbf{P}$), where $\mathbf{\Omega}=\{ g_0, g_1, ..., g_{L-1}\}$ and $\boldsymbol{P}$ is a probability measure of the occurrence of gray levels, i.e., $\boldsymbol{Pr}\{ g_k \} = h_k/\sum h_k$;

denoting a membership function $\mu_S(g_k)$ of a fuzzy set $\boldsymbol{S}\in\mathbf{\Omega}$ indicating a degree of properties comprising attended areas possessed by gray level g_k; and

representing the properties as a fuzzy event as follows:

$$S = \sum_{g_k \in \Omega} \mu_S(g_k)/g_k \text{ ; and}$$

computing a probability of the fuzzy event by:

$$P(S) = \sum_{k=0}^{L-1} \mu_S(g_k) P_r(g_k) \ .$$

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18. (Currently Amended) A computing device for modeling image attention, the computing device comprising a processor coupled to a memory, the memory comprising computer computer-program instructions executable by the processor for:

quantizing a preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser as compared to the image, the preprocessed image being a resized version of the image with an original aspect ratio and in a color space consistent with human perception; ~~and~~

generating a contrast-based saliency map from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components for each perception unit; and

performing a fuzzy growing operation to extract attended areas from the contrast-based saliency map, the fuzzy growing operation comprising:

partitioning the contrast-based saliency map into two mutually exclusive areas as a function of classes of pixels comprising attended and unattended pixel areas;

selecting seeds for the fuzzy growing operation according to a set of criteria such that a seed has a local maximum contrast with respect to other regional perception units and the seed belongs to an attended area;

grouping pixels in the contrast-based saliency map with gray levels that satisfy criteria that indicate attended as compared to unattended areas; and

iteratively growing the attended area by using grouped pixel as seeds in subsequent fuzzy growth operations until no candidates of the perception units can be grouped.

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19. (Previously Presented) The computing device of claim 18, wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map.

20. (Previously Presented) The computing device of claim 18, wherein the computer-program instructions further comprise instructions for extracting an attended area from the contrast-based saliency map.

21. (Previously Presented) The computing device of claim 18, wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map.

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22. (Currently Amended) A computing device comprising:

means for preprocessing an image to generate a quantized set of image blocks; ~~and~~

means for generating a contrast-based saliency map for modeling three-levels of image attentions from the quantized image blocks; and

means for performing a fuzzy growing operation to extract attended areas from the contrast-based saliency map, the fuzzy growing operation comprising:

partitioning the contrast-based saliency map into two mutually exclusive areas as a function of classes of pixels comprising attended and unattended pixel areas;

selecting seeds for the fuzzy growing operation according to a set of criteria such that a seed has a local maximum contrast with respect to other regional perception units and the seed belongs to an attended area;

grouping pixels in the contrast-based saliency map with gray levels that satisfy criteria that indicate attended as compared to unattended areas; and

iteratively growing the attended area by using grouped pixel as seeds in subsequent fuzzy growth operations until no candidates of the perception units can be grouped.

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23. (Previously Presented) The computing device of claim 22, wherein the means for generating the contrast-based saliency map further comprises:

means for dividing the image subsequent to quantization into multiple perception units; and

means for calculating a respective contrast of color components for each perception unit; and

means for normalizing calculated contrasts to smooth the contrasts.

24. (Previously Presented) The computing device of claim 22, further comprising means for extracting attended points from the contrast-based saliency map.

25. (Previously Presented) The computing device of claim 22, further comprising means for extracting an attended area from the contrast-based saliency map.

26. (Previously Presented) The computing device of claim 22, further comprising means for extracting an attended view from the contrast-based saliency map.